THE AFTERMATH OF A CLUB OUTING.

BY ALDEN SAMPSON.

For the suggestion that we should take a look into the Roaring River country we were indebted to one of the earliest members of this Club, after whom, in case of doubt, peaks are named in the Sierra. Five days we spent in the Giant Forest, including that of our arrival, then retraced the trail by which we had come as far as Rowell Meadow. An occasional picture remains in memory; for instance, we saw where a bear had gnawed in a dead stub at a hole dug by a woodpecker for ants, and had given it up, and we passed a thicket of chaparral near the Sherman tree, where Assistant Superintendent Fry told me that he had on two or three occasions routed out a bear. He made use of one phrase in describing this incident which is not lacking in a certain quality of vividness. He said that his dog would quite fearlessly go into the tangle in search of the bear, but when the latter charged him would come dashing out "with his tail sticking straight out under his chin." That was a vigorous rendering of the scene, and summons the picture before us. A man does not have to be a dog to feel the force of the description; one touch of nature makes the whole world kin.

Again we stopped to enjoy the wonderful panorama at Profile View, the grandeur of snow-peaks, and of valleys intervening, where even at this distance brooded the pleasant gloom of the forest, emphasizing in the distant mellowness of atmosphere the clean-cut dignity of mountain-tops, sharply outlined against the sky. All the foreground is naked rock, the record of glacial action,

(See " The Ascent of Asama-Yama," p. 186,

(THE VOLCANO IS FORTY MILES DISTANT.)
From a photograph by the author.

often in *strata* overlapping like the layers of an onion, a circumstance in itself, by association of ideas, far from disagreeable to the mind of the hungry mountaineer.

No trip would be complete without an occasional bother with pack-animals; we had something of this sort in the disappearance near Pattee Meadow of one of the mules with his precious burden. Two of us had stayed behind to remonstrate with the Skate, who had refused to keep up, and when we pushed on, after a brief delay, the new mule, who was ahead, had disappeared, and, not knowing his precise personal equation, we feared that he had lit out or perchance lost interest in the expedition and come to the decision that home and a life of leisure possessed greater charm than strange scenes, however fair. For half or three quarters of an hour we had the hateful sensation of "lost stock," during which time we scurried around over the face of the earth in a manner not dissimilar to that in which ants disport themselves when their domicile has been disturbed; till all at once, apparently from nowhere in particular, just as happens in a dream, there was the lost mule again in the trail, racking along at his best gait to find us, apparently as much interested in the celerity of progress as we were ourselves. Many scattered boulders were here, and perhaps he had chosen one of these with some exercise of good judgment behind which for the moment to hide. Our joy at seeing him again effaced all resentment, and every one goodhumoredly swung into line.

Camp was made at Rowell Meadow; once a good pasture, now infested with cattle. Feed was correspondingly short; but nothing better was in sight, so they had to go through the empty motions of filling their bellies, and we were up bright and early to get on our way and give them a more satisfying opportunity. The senior partner of our pleasant band was stirring at 4 o'clock, and had changed all of the pickets before the rest of us were awake. The distinguished-looking vaquero,

whom we had met here before, set us on our way through the labyrinth of cattle paths to the proper saddle of the hills where lay the trail. None of us had ever been over this before; of course we had no guide, and the finding of our way was one of the charms of the trip. It would have been perfectly easy to do this save for the presence of cattle and the distracting maze of trails which they had made.

Shortly before noon, having crossed the divide into the Roaring River basin, and finding water and something bearing a remote resemblance to feed, we threw off the packs and let the stock refresh themselves for a couple of hours in the heat of the day, and then skirting Williams Meadow we followed Sugarloaf Creek down to the little dome which gives it its name. Here in the network of cattle paths we went too near the river and away from the real trail, which, we ascertained afterwards, crosses the plateau higher up and makes a cut-off by Bog Meadow to Scaffold Meadow. Near this latter it was our intention to camp, on the far side—that is, the right bank-of Roaring River, a mile or so below the junction of the two branches. We finally found ourselves pinched in on a steep, very rocky hillside, with the choice of three courses before us,-viz., of returning to the last patch of grass, which was not really sufficient for the sustenance over night of five head of stock; or of going ahead by pursuing a precarious course on the hillside overhanging the river; or, finally, of climbing away up above our present situation and attempting to intercept the lost trail, if one were there, a circumstance of which we were then in doubt. In council the last alternative prevailed, and after scrambling about we struck a well-worn trail which soon led into the Roaring River bottom. Our acquaintance at Rowell Meadow had told us that there were cattle here, but we had not realized how many there were to be of them and how completely they had given their minds to the effacement of everything fit to eat. Fortunately, at this juncture a conciliatory stockman,

with his wife, his son, and partner, came to our aid, and informed us that on the other side of the river was fine feed, which he offered to show us, and the ford by which it was reached. With great friendliness he took his boy behind him and insisted that the one of our party who was afoot should ride the lad's horse across the ford; he advised us to reconstruct the pack of the short-legged Skate, so that it might be well above the reach of the water,-rather turbulent here,-and we soon found ourselves safely across at the edge of a fine meadow, full of the richest grass, where cattle were not permitted to enter,-choice grazing kept exclusively for horses and for a few milch cows. This was Scaffold Meadow-the name probably souvenir of a time when a cache had been constructed by hunters or sheepmen high out of the reach of coyotes. Our camp was established beneath some ponderosa pines and under the shadow of a great rock, away from the moisture of the meadow. Our supply of water was drawn from two little springs, one of them in the cavity beneath the roots of a fallen tree, where the water was cool and clear. A crenière was quickly constructed of a great fallen pine branch, its naked tip sprawling over the ground like some antediluvian monster, and serving as ballast, while the butt-end projected over the fire. This was supported by two rough crotches interlocked, the charm of such a combination being that it is erected without artificial fashioning, from material at hand, and without the aid of any extraneous adjuncts such as nails or thongs.

The two following days were spent in exploring the forks of the river. The first, we ascended the right-hand branch, which flows through what is properly called Deadman's Cañon, wrongly named on the sheet of the Geological Survey—a pleasant enough tramp up and back of fifteen miles. To our left as we started was a lateral moraine, one of the largest to be seen in the Sierra, its top a thousand feet or more above the river and two or three miles long. Several strong

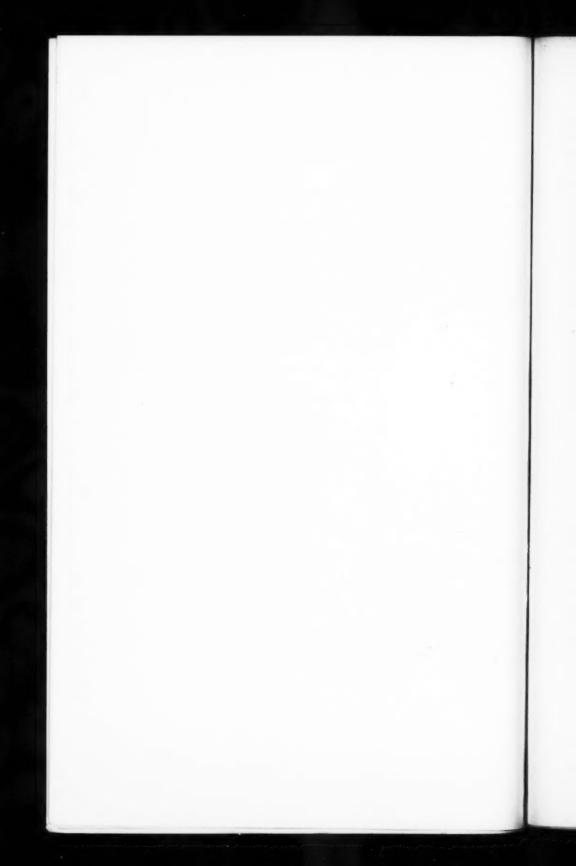


LOOKING DOWN INTO THE ROARING RIVER VALLEY FROM NEAR THE SHEEP-HERDERS' CAMP,



DODEKATHEON MEADOW AND THE CIRQUE AT THE HEAD OF COPPER CAÑON—CATTLE OUTFIT TO THE FORE.

From photographs by the author.



avalanches had pursued their course into the valley, and in one or two instances had carried their load of ice, rocks, and trees far across the stream onto the other side, where the fallen trunks lay with their tips pointing down-hill; the reverse of what would happen if they had descended upon that side of the river. Long reaches of perfectly limpid water flowed through fragrant meadows, and a mile above Table Creek, which takes its rise only three or four miles away at the mountain of that name whose flat top is such a feature of the Sierra, we had a view of the famous Whaleback.* Long reaches of apron rocks in the bed of the stream, smoothed by glacial action, prevented the ascent of trout, and we resolved, if we had time later, to stock these upper waters with fish. There was an increased interest in the scene that I found bits of obsidian clippings, record of the former presence of Indians here; everything that emphasizes its primordial estate of untamed nature is such an added delight in the forest. Our luncheon was partaken of on a sunny bank by still waters at the edge of a grove of tamarack pines and quaking aspens.

That evening the stockmen called and invited us to go on a picnic the day following, up the other branch of Roaring River, correctly called on Le Conte's map "Copper Cañon." Mrs. Murray accompanied us, and her boy; so we were a party of five. The rather complicated ford lay a mile below us, and we were not sorry to have our friends show us again the unfolding of this in detail. The river was divided, and the section between the two streams was through cottonwoods, their bases now submerged. There was just one place where the crossing could be made with safety, and to do so it was necessary to proceed down-stream along the island in the middle of the stream. Afterwards on a memorable occasion I had the pleasure of untwisting this trail in the dark, trusting absolutely to the unerring skill of the pack-mule whom I was riding.

^{*} Portrayed in a former BULLETIN; Vol. I., No. 6.

The alpine willow, at an altitude between eight and nine thousand feet, was just coming into bloom, and was pleasantly fragrant, having a quality of scent similar to that of the grapevine, this perfume so exquisitely delicious as to make one cast a sort of sigh as he inhaled it. The great meadows also were a wonder of brightness and of sweet odors coming from the myriad flowers of the dodekatheon, a plant known also under other pleasant names, such as "Shooting stars" and "Ithuriel's spear." Individually, these pink and purplish flowers with their umbel of twelve blossoms on a single stem (which gives the name of the Twelve Gods) have but slight scent, but from whole fields came delicious odors, as fine and as worthy of renown as that from the absinthe fields in Switzerland, or, as we are often assured in poetry, from "fields of asphodel,"-which, by the way, though the poets seem unaware of the fact, is a plant without perfume. I have seen it often in Sicily, in Greece, and in Asia Minor, wraithlike and in mass handsome as it bows before the breeze, but without any endowment of scent whatever.

We passed the grave of a Basque sheep-herder, inclosed within a primitive fence of logs, with its French inscription on the carved headboard, beginning "Ici repose Jean le Basque," or whatever his name may have been; and it was the presence of this grave, I am told, which caused a visitor to this cañon, who wrote up the pass at its head in rather lurid style a year or two ago, to believe that it was "Deadman's Cañon," and, acting on that supposition, to cause the change of names on the Government map in Washington while this particular sheet was receiving its final corrections, and while the editor of the series was temporarily absent. The names are correctly given on Le Conte's map; "Copper Cañon" for this, named after an old copper mine at its source, and "Deadman's Cañon" for the other.

In the afternoon we climbed over the rim of the valley, ten thousand feet above the sea, which commands a view of Dollar Lake,-stupidly named, since a dollar is the least interesting of all things in the world to one in the heart of the Sierra, and with the Sierra in his heart. The lake was still full of ice. I found the fragment of the jawbone of a bighorn high up among the rocks, and the wife of the stockman told me that she had on a former occasion found at the edge of the lake the sheath of the horn of one of these animals, still well preserved, showing that quite recently they had lived here, or at least had visited these peaks. With slight pains they could be tempted back again, and when game refuges are established, mountaineers may perhaps enjoy seeing them once more. Above our luncheon place and below the copper mine was a splendid cirque, very impressive in naked granite and snow, with its meadow beneath of fragrant and gleaming cyclamen. Columbines of delicious sweetness, of the yellow kind, and a variant of the same flower merging into orange and red, thus a hybrid between the variety found above and that found below this place, grew on our way, and bushes of white spirea throve among the wreckage of avalanches which had sadly rent the forest during this past season. A half-century at least must elapse to make good the destruction caused in one season alone. In the evening of this day Blake and I agreed to go up Mt. Brewer.

The ascent of this mountain was so pleasant a climb and one so typical of similar experiences that perhaps I may be pardoned if I describe it somewhat in detail. It was half-past 2 in the morning when I lighted the candle in my folding lantern. Everything had been arranged the night before; soon the fire was lighted, the coffee was boiling, and we stepped from camp, within the hour, just at the first crack of dawn,—still too dark, save in the moonlight, to see the trail. Under the heavy shade of the trees skirting the meadow, one had to feel his way along the trail with his feet. We stole by the sleeping camp of the stockmen without awakening their dogs, and at a quarter past 5 were at the mouth of

Brewer Creek, three miles above. Another hour we toiled up over the moraine, which here records the thickness of the glacier, once twelve hundred feet in depth. Juniper grew along its rocky slopes; these love the gravel and the blazing sun. Manzanita bushes abounded, of crooked growth and with handsome mahogany-bright branches, white sage, beloved of bees, pungent mint, and brilliant painter's-brush were scattered up and down. On the lower reaches of the moraine grew a tall and strong plant, a perennial with towering shaft, the Frasera speciosa,-in the words of our botanist, a "surprisingly 'loud' member of a very modest and delicate family," the Gentians. The flowers of this were of greenish creamcolor, and the whole raceme, with opposite-growing, handsome leaves, simple and entire, was three or four feet in height; a plant expressive of much vital power. It towered aloft like a Chinese pagoda, tier above tier of ornate architecture. Among the contorta pines we noticed where in many places the staminate flowers, while in an advanced stage of the bud, had been cut off by the chipmunks preparatory to drying and storing away for the winter, the squirrels having this trait in common with the Mexican Indians, who, Zumholtz says, gather these for food before they open. One difference must be recorded; the Indians fry theirs, while the chipmunks eat the fresh buds as one would an apple. I tasted these buds, and found them, when in just the right stage, sweet and tonic. One should not wait until the pollen is released; then they are not agreeable to the palate. What clouds of this fecundating powder blow loose when it is ripe! One often sees pools of water quite covered with the golden impalpable dust, and little windrows by the edge of a stream. A fire, doubtless set by the sheepmen for the sake of the fresh grass, had its run here not less than six or eight years ago, as one could tell approximately from observing the age of the oldest of the young pines, since all seedlings and little trees had then been destroyed. One cannot, however,

place implicit reliance upon the "internodes" (the spaces between the recurring whorls of branches) as an infallible guide indicating annual growth, as he may securely do with the rings which accurately record the season's flow of sap and increase in size. These whorls of branches are very handsome, particularly in the fir trees, and I have often thought that a young fir tree cut in sections so as to preserve them uninjured would make charming decoration for the walls of a festive hall, in form resembling splendid great green snowflakes, becoming more complex from the top to the bottom of the tree as the branches are amplified in subdivision.

"Sarvis" bushes grew in the vicinity of the river, by their presence almost as much a reminder of the Indians as obsidian chippings. The berries of these bushes once afforded wholesome food over a vast area,-in the Rocky Mountains, in the Sierra and far north into Canada. In the dried state they were one of the ingredients of pemmican, the standby and chief sustenance of man in his subarctic sledge journeys; these, mixed with pounded meat and the melted tallow of buffalo, elk, or deer, constituted that famous compound which was unrivaled for concentrated energy. Then, from the service bush was procured the elastic and stubborn wood, charged with just the right sort of resilience, from which the most powerful bows were made. This was procured only after keen and intelligent search, such as an Indian alone is capable of, the despair of a white man, who, among the tangle of crooked branches, would be unable to find a pair of exactly the proper shape and thickness in a week of Sundays. The Indian bow, when completed, was often composed of two tapering pieces, bound together with deer sinew, in its two halves mainly conformed by nature to the use of man. A bush which might stand as a symbol of the undegenerate days when firearms, and the equally murderous fire-water, were unknown.

Here we got our first glimpse of Mt. Brewer, not seeming very high, as one always finds to be the case

From photographs by the author.

with a mountain when contemplated from its flank, where it is, of course, foreshortened and dwarfed. At an elevation just under ten thousand feet lies a little tarn, by which the former sheep camp had been established. If one desired to avoid unnecessary labor, he should camp here, leaving Roaring River at the lower end of the moraine, just above Moraine Creek, where the ascent is quite gradual. The top of the moraine is nearly level,that is, it conforms to the course of the former glacier, and horses could reach this camping-ground without difficulty, and would find abundant feed. Trust the canny Basque to make a good selection for his central camp! The vegetation was several weeks later than in the valley; "tamarack" pines were growing about us, instead of the Jeffrey and ponderosa pines below, also gooseberry bushes and the chinquapin, which bears its crop of minute triangular chestnuts, a favorite food of deer, grouse, and many sharp-toothed, keen-eyed little beasts. As we looked back across the basin of Sugarloaf Creek we had glimpses of Mt. Silliman and Alta Peak. Snow-patches bordered the valley bottom here. An oldestablished game trail, worn deep by immemorial deer, was clearly defined, and among the pines was a log torn open not so very long ago by a bear. Below this the bed of the creek was eroded, but about us we saw the first direct record of the work of the old lateral glacier, in the shape of smooth, ice-worn rock in the bed of the stream. I brought home one superb specimen of granite polished by ice, which, though only a span in length, plainly shows in outline the curve of the glacier's fall as it plunged to the valley below. Just above this rock-ferns grew in abundance; the lovely pentstemon flourished, queen of the Sierra flowers, in color a crimson rose-pink, of pure Roman dye; a red stonecrop, the Sedum roseum, appeared, and an abundance of bunch-grass ran up the side of the hill, not found by us below this level. The sheep of this altitude, if not literally in clover, were in feed that suited them every bit as well, the fattening



VIEW FROM THE CAVE, LOOKING DOWN BREWER CREEK—ALTA PEAK IN THE DISTANCE.



MT. BREWER FROM THE LAKE JUST ABOVE THE SHEEP-HERDERS' CAMP ON BREWER CREEK.

From photographs by the author.

Misosi

mountain grass, nourished on abundant rains and dews. Soon the view of the cirque began to open up, with snow on its sides and beautiful bare granite. From the talus-piles a marmot saluted us, piercing the silence. I have heard these little beasts answer the ear-splitting whistle made with an empty cartridge-shell, and on one occasion a more than usually enterprising individual ran a long way, quite across an intervening valley, to ascertain what in the world caused such an unearthly scream. Plainly his curiosity was bigger than he was, and he

arrived quite breathless and with eager eyes.

A fern-like rue, with leaves very similar to the maidenhair fern, grew here, a yellow wall-flower, pink phlox, and sheep-laurel, which the herders have to guard their flocks against, since to eat of it is fatal, and no saving instinct protects the animal; on the contrary, its taste seems to be irresistibly attractive, and the herder's duty is to mark its presence and to keep his flock at a safe distance. The ground in moist places was almost a mat of waxlike white flowers (Hesperochiron Californicus), the blossoms not unlike those of the old-fashioned "wax-flower," beloved of country householders and suggestive of one's youth; I have seen this flourishing mightily in a New England sitting-room when I was a boy, its flowers the pride of the countryside. It seemed as if the Milky Way had become entangled here in the grass beneath our feet, hiding by day, but faintly glimmering, as if remembering dark skies, or like a host of fireflies beaten down into the grass after a shower. At 10,300 feet we found the pink bryanthus, the first sight of which is always thrilling to a mountaineer. We were now well within the cirque, with the jagged ridge ahead of us, only a little more than two thousand feet above, which connects Mt. Brewer and the North Guard. Near a tamarack pine close at hand, marked with two stars, a double asterisk, in the manner of a Baedeker guide-book, as if to emphasize the excellence of the view, there was a pile of cyclamen leaves cut by the mountain beaver (Aplodontia), the shyest and one of the most engaging of mammals. Here grew the willow with its fragrant flowers, male and female, yellow and gray, like fuzzy bees; the elder was in abundant flower, the lungwort, and the very fragrant yellow columbine, a superb flower. Whether the note of a cony greeted our ear we were not quite certain, but on our way back we caught a glimpse of him as he uttered his derisive cry, a bleat so absurdly like that of a lamb that the first time that I heard it, many years ago, while hunting mountain sheep in Colorado, I nearly jumped out of my skin with astonishment when this little beast uttered his cry almost beneath my feet.

A creeping kalmia only a couple of inches high was found, and Labrador tea. A certain sedge with dark purplish-brown flowers abounded, a "grass" long to be remembered, since in extremity once it furnished forth a breakfast to my need, and convinced me that if Nebuchadnezzar during the time that he derived his sustenance from this sort of food only indulged in the right kind of exercise, preferably to scale the peaks of the Kingdom of Babylon, which were all around his summer palaces, and if he were unstinted in his devotion to this sort of recreation, his peculiar food may have been chosen because he liked it and because it agreed with him. And as for being "wet with the dew of heaven,"that is one of the most delightful things in the world; to "eat grass like oxen," and to be "wet with the dew of heaven," lie well within the capacity of any Sierran. Nebuchadnezzar has had a lot of notoriety for this, far beyond his deserts. "All flesh is grass," saith the wise man, and if he happens to be good and hungry and of sound digestion, he instinctively pursues that course by which the one is most expeditiously transformed into the other.

Just under eleven thousand feet lies a good-sized lake, now half-full of ice. Above us opened a grand view of the summit of Brewer. A little sulphur-colored plant grew on these rocks, one of the Compositæ. It was

here that we first found one of the most lovely of the Sierra flowers, the Primula suffrutescens, with its tufts of clear purplish-blue flowers gleaming among compact foliage, growing often in a sheltered crevice where the sun could exert its full power, seeming in their sharp note of color to proclaim aloud the keenness which is so characteristic of this alpine air. As the name signifies, "suffrutescent," it is "somewhat woody at the base," a hardy mountaineeer, tough, handsome, and compact. It does not climb to this height for nothing; here are found all sorts of things to overcome and the fierce vitality which overcomes all things. At half-past 7, close to the last sentinels of the white-barked pines, in preparation for our second breakfast, we lighted two diminutive fires, on which, carefully supported by bits of rock, snow was melted in our round-bottomed tin cups, a ticklish operation, requiring nice adjustment of means to ends, where one learns from experience that time is saved by patient exercise of skill to prevent an upset, in which event, as one learns to his cost, the flame has to be fed with splinters and whittlings of stubborn gnarled pine, and teased to life again. We had brought Anker's bouillon capsules, the best of all similar preparations, which, dissolved in boiling water, tasted very good indeed with Bent's altogether excellent water-crackers. Soon after 8 we were climbing again, having achieved half of the height of the mountain above the floor of the valley, and perhaps two thirds of the actual distance to the summit. A rock-cress, Arabis, of a lavender-pink color, grew just above our camping-place. Soon after starting the rain began to fall gently, and we were so fortunate as to find a cave among the rocks large enough to crawl into, the only one encountered in the day's climb, a fortunate discovery for us, since in it we were quite protected from wind and rain, and had as well a splendid view to contemplate. Mountain rats, many generations of them, had made their home in this recess; one had built a nest of what would seem untoward material, bits

of twig from a prickly gooseberry bush, about the only sort of timber here, and well covered with thorns. Such a domicile might afford shelter, but, like the Irishman's underdone pork, one would expect that he would "feel it doing him good all night long." A marmot, too, had made this his residence, burrowing well beyond possible molestation, though he would have few enemies at this altitude, but possibly if proper precaution were neglected some sort of telepathy would apprise an ever-vigilant wildcat or coyote of the fact. Nature, like Nelson's England, "expects every man to do his duty."* Though somewhat remote from the busy haunts of mice and men. this had been rather a center of mammalian activities. Generations of little creatures had made this great hall their forum. An alpine saxifrage grew close by, and the gooseberry bushes on which the mild-eyed woodrat had made requisition. These were in flower, and had a pleasant aromatic scent, promise of fruit to come. The rain soon letting up, we started off under the ledge and twice crossed the snow, beyond this finding a handsome lavender-colored eriogonum, a representative of the buckwheat family. Here was a hoard of leaves of the lungwort and dodekatheon, all quite fresh and gathered since night.

These I fancy the mountain rat had brought in after daylight for his refreshment during the day. A little huckleberry bush throve near by, a pigmy of his race, only an inch high, with pink flowers, trying to fill the place of his more stalwart relatives. One is reminded of the remark made by Oliver Wendell Holmes, small in stature but of robust wit, when, at a committee meeting, he was asked if he would "fill the shoes" of the gigantic Phillips Brooks, who was absent. His comment in accepting the position was that he would try to do as

^{*} Since writing the above, Professor Lawson has told me that on a recent visit to Mexico he ascended Popocatepetl, 17,550 feet, and that he found, directly on top, in the new-fallen snow, a fresh coyote's tracks, made the morning of his ascent, an interesting evidence of that animal's curiosity, enterprise, and endurance.

requested, but that he could "in imagination feel the shoestrings flapping in his face!"

That we might miss no sort of vegetation suitable to this altitude, we saw in abundance that phenomenon, always of interest, known as "pink snow," under the microscope appearing as interesting little red balls, primitive and husky representatives of the vegetable kingdom. Two little lakelets now came into view, one of them still frozen tight, the other half open. We were at twelve thousand feet elevation, well above the trees: a few stunted willow bushes still accompanied us, the buds not yet burst. Soon rocks compelled us to take to the snow again-so steep that we had to cross it quartering. A little alpine buttercup (Ranunculus oxynotus) grew by its bank, two or three inches high, and the eye recognized ancient glacial action on the rocks, though here we approached its upper limits. A lone gooseberry bush grew in a crevice at 12,400 feet. Above this was a granite cirque, quite bare to the eye save for a scattering buttercup or two and a little dry sedge of the preceding summer, where the disintegrated rock permitted and the ledge focused the sun. Two thirds of the way up the cirque, a fine view of mountain-peaks began to be opened. Reading them from left to right, they were Mt. King, Genevra, Thunder Mountain, Table Mountain, and Milestone,-a view very agreeable after honest toil, and, like approaching spring or other nice things in their beginning, which the imagination of each will readily suggest, perhaps as dear in retrospect as the more complete and always longed-for fulfillment. The snow, across which devastating summer winds had blown, was pitted as a human face by smallpox; elsewhere we saw it eroded into little waves, like a miniature sea congealed. A junco flew over our heads, in the main slate-colored, but noticeable for his pinkish-brown sides, and one of the sparrow clan flitted by. I fear my notes are not sufficiently definite quite to identify him. Below us on the little lake a small bird perched on an iceberg; all along the ice the hunting

was fine for these creatures, insects being long preserved there in cold storage. Once, many years ago, I had taken advantage of a similar situation, when myriads of migratory grasshoppers, crossing the Rockies, had rested on the snow-fields of Ethel Peak and become congealed. In a week's time I was so fortunate as to kill three grizzlies who had come there to eat them, and I missed the opportunity of a lifetime in not staying with that snow-bank until I had killed all the bears in that part of Colorado.

A hummingbird darted overhead, the whir of his wings having a peculiarly exotic sound up here among the ice at the top of the world. It was like a glancing beam of the tropics at the north pole. The real climb began at 11,200 feet, a tableland, not above vegetation but ahead of it, winter still reigning except in very warm nooks; we found dandelion-like representatives of the Compositæ in flower, some of them scarcely a half-inch high. Soon we began to get a more extensive view to the northeast, through Glenn Pass into the basin of Wood's Creek, with Mt. Pinchot in the distance and Mt. King and Mt. Gardiner nearer at hand. Here grew a little yellow flower with varrow-like foliage, two inches high, not met before, a potentilla, and another of the Compositæ, this one like a yellow daisy, the size of a dollar. It was just past noon when we had reached the cave. After a brief rest there we pushed on above the saddle, and were now opposite the summit of Cross Mountain, 12,140 feet, which nearly terminates the spur of the Great Western Divide, overlooking Bubb's Creek. Now we were greeted by hail, and later by rain and hail. Fortunately, this began to let up as we started to ascend the steep snow and rocks. If any part of the ascent were not perfectly agreeable, perhaps it might have been while ascending this steep snow-bank and the snow beyond, where a misstep would have meant trouble. In the Canadian Rockies or in Switzerland all work of this sort would be achieved by climbers attached to one another by ropes, not less than three people

attempting it, always inclusive of one or more professional guides. Of course in our organization there are men just as expert as professionals, but there are not many of them. The Sierra Club has been most fortunate in its immunity from accident, but no steep snow or ice work is attempted without a certain risk unless people are roped together and climbers of experience take part. A single false step or failure of nerve, for however brief a moment, without this precaution might well cost a man his life. The trouble is that in the Sierra there is so little dangerous snow that one will not take the trouble to prepare the proper precautions or to use them when occasion arises. He is not tempted to do so, as he naturally would be where the peril is more sustained. He deliberately prefers to "take his chances," and this in a way makes Sierra work more hazardous than mountaineering of a far more arduous type where strict precautions are observed. Moreover, it not infrequently happens that individuals are tempted to undertake mountain work who could not "try out" or qualify for such in the opinion of a discriminating judge.

The fun of mountaineering, or of other seemingly perilous sports,-for instance, of bear-hunting,-is to be so sure of yourself and of your methods that a difficult task is achieved with precision by the exercise of skill and with the certainty that one can do it and come out unscathed. The problem is not to achieve the end desired by "taking chances." Pluck is a good thing, but the kind of pluck that leads one to risk his life for a trifle is pure folly. This kind of taking of risk in the pursuit of sport marks the tenderfoot; it is only the fool who with a knowledge of the danger attempts a thing of this sort so ill-equipped or so inexperienced as to imperil his life, and an ignoramus is just as bad as a fool, when you come to consider results. The game is not worth the candle, and even if it were, that is not the proper way to play it. Many attempt mountain-climbing who would not think of looking a grizzly in the face, and the sport is

just as perilous as bear-hunting. In either case, the rule is, First learn how. The trouble is that everybody thinks he could preach a sermon or climb a mountain if only his wind held out; the art of the mountaineer he has not the patience to acquire. One is reminded of the remarks made by the gentleman of Celtic extraction when he was asked if he could play the violin. "Faith,"

he replied, "I don't know; I never tried!"

On the rocks grew five varieties of lichen,—a yellowishgreen one, others of sage-color, black, orange, and brown. Now we were level with the top of North Guard, 13,304 feet. Here grew the yellow draba, one of the mustard family (Draba alpina, variety algida), the name, "chilly," significant of the cold situation in which it chooses to dwell.* Soon was lifted into view a little tarn, reflecting the light of the skies. It is astonishing how these little bodies of water add variety and interest to the view; one always thinks of an eye in seeing them, such life and expression do they give to the landscape. This was of a delicious light opaque green, characteristic of bodies of water in high, rocky mountains. One sees them to perfection in Switzerland, and of many varying tints; the color is due, I presume, to the presence of mineral, of infinitesimally disintegrated stone; the peculiar hue is found petrified in jade. Loose rocks drove us again to the snow, soon so steep as to compel us, sidling to the south, to come back to the rocks. Then up over broken boulders, most of them easy to cross, one, however, proving baffling and turning me back to follow my companion to the east side of the ridge, where we somewhat gingerly picked our way along a bank of drifted snow, keeping away from the edge, which overhung. It was not more than a hundred yards farther to the summit. Our first act there was to line up in battalions and give the Sierra yell, then we had a look at the Club cylinder and recorded our names.

The clouds were only partially lifted, and we had one of those mountain views so stimulating to the imagination,

^{*} Or more recently named Drabs lemoni-Watson.

wherein one catches momentary glimpses of far-distant reaches. Avalanche Peak lay before us to the northwest, and almost to the north Mt. Gardiner, wreathed in clouds; the Kaweah group one saw plainly to the south. A little north of east lay the East Vidette, beyond that University Peak, Mt. Stanford, and south along the main range Mt. Bradley and Mt. Keith. To the southeast from us were visible Mt. Williamson, all but its top, Mt. Tyndall and Mt. Barnard in cloud, and, glancing through the mist, the edge of Mt. Whitney's well-defined plateau. We were interested in tracing the usual route by which Mt. Brewer is ascended, up from East Lake, with its somewhat hazardous final climb. The way by which we had come is much simpler, and is accompanied with less risk. The last rise of two or three hundred feet of the ascent . from East Lake has a distinct element of danger for all save qualified experts, and it could hardly be claimed that of the party of forty-eight who made the ascent in 1902 every single individual would answer that description. To the northeast from us was a lakelet of pale ultramarine hue, and to the north a smaller one still. Under the South Guard to the southwest lies one much larger and very beautiful. It was a poor day for photography, but we stored away in innumerable brain-cells views of storm and mountain grandeur long to be cherished. Such aspects of nature, it is to be hoped, become absorbed into character, and mean mental stamina and endurance of purpose. At 2 o'clock we started down. A minute yellow flower grew not fifty feet below the summit, an eriogonum, its blossoms lying close in the midst of firm woody vegetation, a little tuft which altogether would fit comfortably within a half eggshell, frail, but with strong vitality, blossoming most cheerfully here, among the snow and storms, at an elevation close to fourteen thousand feet, in a climate not dissimilar to that of the Arctic Circle.

On top we had climbed to the summit of the bold and picturesque boulder which dominates that scene, a feat

accomplished doubtless by many previous climbers; Le Conte has told me that he stood erect on its peak for a

photograph, which took good nerve.

On the summit we had found an abandoned staff of cottonwood left by some previous climber. This rendered good service when the descent of the snow-banks began. We divided it with as near mathematical precision as might be into equal sections, and it afforded each of us a brake to aid in that somewhat ticklish operation. The upper reaches of the snow were far too steep to permit of coasting; to have attempted it would have borne greater resemblance to falling off from the mountain-side than to sliding down-hill. The temptation to begin at the earliest possible moment was, however, strong; the process of laboriously picking one's way over the broken rocks in descent being excessively tedious; so just as soon as we dared, we turned ourselves loose on the snow-bank, digging in our heels to prevent too rapid progress, and retaining the proper position by the drag of the extemporized brake. The result was that we fairly flew over the not altogether even surface. The snow was somewhat melted, and hence yielding, but was full of good, honest ice crystals which cut through the strong cloth which served as our only toboggan like coarse sand-paper. For the second time this season I sacrificed a pair of trousers, or a useful portion of them, to this exhilarating sport; on Goat Mountain in the first place, and again here. The process of attrition and of transformation of that which was thick into that which was excessively thin or non-existent was in both instances brief. A stretch of the mountain which it had taken us a tedious half-hour to ascend was accomplished in half a minute, or it may be in less time. As I progressed in my rapid flight, like Donati's comet, with a tail of loose snow streaming after, I had noticed in glancing ahead that something had dropped from my companion's pocket and had bumped after him, as if in the endeavor to catch up. Flying over the snow-bank, I made a grab at the article,

whatever it was, though the process was a complicated one, it being necessary to maintain an equilibrium by the use of the brake at the same time that one snatched at the article offered to his grasp only for the briefest instant. It proved to be a box of talcum powder for the feet, and this I managed to throw far ahead, where it was later recovered. He that has not coasted down a snow-bank on a mountain-peak has missed one of the genuine sensations of the Sierra. Things occur with the rapidity of thought while the actual glissade is being made. The last cobweb and vestige of somnolence leaves the mind; one is awake and alive!

On the flatter stretches, the "red snow," here of a pure salmon tint, was very noticeable, particularly in depressions, and of a more vivid color when the surface was kicked off. I found a big dragon-fly chilled on the snow. and wishing another look at him, and needing the free use of both hands and lacking any other place to carry him, I promptly clapped him into my hat, where after a time he was revived by the heat of the body and fluttered about in an aimless sort of way. Naturally, coming to in the dark and not recognizing his surroundings, after the novelty of the situation had worn off and the first gratification of warmth had somewhat subsided, he felt a certain surprise, I suppose, at finding himself beneath an unfamiliar opaque canopy and above that which to him must have seemed a sort of tangled chaparral radiating so much heat. I turned him loose with the Russian formula of farewell, "Be with God," and we went our several ways.

At the very first outpost of the albicaulis pines, and at about 4 o'clock, we stopped for luncheon. From a dead stub near by we soon gathered enough fragments of wood to afford fire for bouillon and a cup of tea. The view here was most interesting; we were just above the largest of the lakes, all ice and snow on one side and beautifully reflecting the overhanging hills. Mt. Brewer towered above in grandeur, seeming higher to the imagination

than when we were ascending, in that its altitude had been measured by our footsteps; a grand panorama was visible of distant peaks, mellow in the light of afternoon.

One moral effect of our day's climb it may be is worth recording, since a similar result is, I fancy, a not unusual experience. There is nothing like an honest day's toil of this sort, and a touch of hardship shared together, even though it be slight, to bring men into close accord. Our experience is typical of many another's under similar circumstances. When we had started out in the morning we were perhaps not quite in perfect harmony, a state of equilibrium not always easy exactly to maintain when more than two people are thrown into such close relationship as necessarily exists in camp, but this day on the heights, with its pleasant difficulties overcome in common, had brought us again en rapport. Our second breakfast, between 7 and 8, had possessed perhaps the slightest possible trait of constraint, but on the way down how different! Here was a love-feast, nothing less, every slightest note of discord stilled, only kindness to all mankind in the heart, and the fullest serenity of spirit in which to partake of food. Truly, whatever one eats tastes good in such a frame of mind; tea becomes ambrosia of the gods, and the banquet nourishes soul and body alike, and-Heaven be praised! -long sustains the memory.

Perhaps nowhere better could this narrative be closed than in such an idyllic frame of mind, one destined to endure. Our return to camp was just after dark, where our senior partner had hot supper awaiting us, thick bean soup and cutlets,—how delightful to hungry men! He had spent the day in stocking with trout the upper reaches of water in Deadman's Cañon, and on the day following our party was broken up by his departure for home. We lingered for a time, doing a little restocking of waters ourselves, but soon retraced our steps to Horse Corral Meadow and came out by the way of Millwood.

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AROUND LAKE CHABOT.



A PROTECTING ARM. From photographs by the author.

ALONG THE FOOTHILLS TO LAKE CHABOT.

By W. ROB. WHYTE.

"Far fields look green."

We travel far for adventure, which is ofttimes very tame, and forget the really interesting incidents in our daily lives. We stay at home and mope, because we have not time for a long vacation, when almost at our very doors are beauties great as those we revel in at the end of a weary journey.

Strolls among the foothills from Piedmont to Lake Chabot may give us opportunities in plenty for restoring our health and delighting our eyes, without much expenditure of either time or money. In the spring there are wild flowers along the roadsides; the little streams sparkle in the sun, and the overhanging trees, like vain maidens, seem to glory in their beauty reflected in the pools.

Then in the open the sturdy oaks throw out their gnarled and knotted arms, defying gravitation, and the smooth, rolling hills are like Mother Earth baring her bosom to the soothing rays of the glowing sun. These oaks and hills strike the mind of the stranger to Californian scenery the most forcibly. There is something so peculiarly suggestive of rugged masculinity in the one and of smoothly curving femininity in the other, that one is tempted to deem them specially typical of the race that has grown up among them. The characteristic "lighting" of these hills is beautifully shown in the paintings of Welsh.

On the eastern slope of our foothills we first come upon that most delicately beautiful of Californian trees, the glorious redwood, the symmetry of whose growth must ever appeal to the artist's sense of form, whether in part,

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in group, or as a single tree. Each branch is graceful; the sun shining through upon many trunks makes a worthy study in light and shade; and a single tree is in itself a picture.

On a clear day let us dwell for a moment on the view looking west, with Mt. Tamalpais standing dark and stately against the sky; the estuary, like a silver thread in the deep blue of the distance; the patches of rich dark, olive-tinted blue-gums at our feet; and the bright green meadows streaked with the yellow roads. It is a scene worth climbing for, apart from the health derived from the sweet, pure air.

And then to Lake Chabot. Many an hour have I spent wandering along its beautiful banks, forgetting the worry and bustle of the city, and wondering at my solitude. A well-formed carriage road skirts the left bank, from which glimpses of the lake, at some times through and at others over the tops of the trees, form an ever-changing panorama.

If we time our return so that we leave the lake at sunset, and the heavens are kind to us—not too lavish in the matter of clouds—well, no, I will not attempt a description.

At the conclusion of our worship at the shrine of the Setting Sun, we wend our way into the shadows of the vale and take our well-earned repose.



THE OBSERVATORY ON MT. ROSE, THANKSGIVING, 1906.
(THERMOMETER SHELTER AND MONUMENT JUST VISIBLE TO THE RIGHT.)
From a photograph by the author.



MT. ROSE WEATHER OBSERVATORY, 1905-1907.

By J. E. CHURCH, JR.

It is less than three years since Professor McAdie began to publish his articles in the Sierra Club Bulletin on mountain sites for meteorological observatories * and less than two since Professor Abbe suggested to the Sierra Club the worthy ambition of establishing on Shasta or Rainier a "lighthouse in the skies" for American meteorology.† Yet within this brief space of time, a mountain meteorological observatory of the automatic type has sprung into existence on the Pacific Coast.

The tale is a strange one, and involves the idiosyncrasies of a professor of Latin and the periodic zeal of a band of recruits won largely by the spirit of adventure. From the very beginning enthusiasm has preceded foresight and both have hastened apace.

The first comprehensive idea of such an observatory occurred to the writer near timber-line on Mt. Whitney in March, 1905, when the sight of Professor McAdie's lone thermometer-box, abandoned by Mr. Bonnett the preceding autumn, drew from him the impulsive offer to obtain the winter summit records desired, providing the observations might be conducted on Mt. Rose,‡ whose summit was 10,800 feet above sea-level and within weekend distance of the University of Nevada, where his academic activity had its center.

The ordinary volunteer observer's instruments, consisting of a maximum and a minimum thermometer and

^{*}Vol. V., No. 2, June, 1904, pp. 87-101: "Mt. Whitney as a Site for a Meteorological Observatory"; Vol. VI., No. 1, January, 1906, pp. 7-14: "Mt. Rainier, Mt. Shasta, and Mt. Whitney as Sites for Meteorological Observatories."

[†] SIERRA CLUB BULLETIN, Vol. V., No. 4, June, 1905, p. 314.

[‡] For the view of the summit from the north, see Bulletis, Vol. IV., No. 3, February, 1903, opp. p. 224.

a rain-gauge, arrived with startling promptness. A thermometer shelter was designed, strong and compact to withstand mountain gales, and with a bottom of slats to permit the easy exit of the snow. After being dismantled and properly packed, it was carried, on June 24th, like a huge sawbuck, on horseback up the trailless side of the mountain. This initial trip was fraught with adventure on the snow-fields about the summit and during the all-night retreat, but its favorable issue was welcomed as an omen of future success.

The period of maximum and minimum instruments did not long continue, for the minimum furnished readings strangely low and impelled the observers to seek more accurate knowledge of the fluctuations of the temperature.

On October 14th a thermograph and a barograph were installed, capable of recording every fluctuation of temperature and air-pressure during a period of eight days, and of indicating by means of a perpendicular stroke the highest and the lowest subsequent temperature and pressure. Thus the second period of the observatory's development began.

By the aid of colleagues at the university, a continuous record of these two phases of the weather was obtained for a period of six weeks during October and November, and with the aid of Professor J. R. Johnson, an enthusiast newly arrived from Kentucky, bi-weekly trips were made after New Year until the next autumn, when rheumatism forced him to retire from continuous service.

During this period the scientific results were suggestive rather than final, and have been quite fully outlined in the Weather Review of June, 1906.*

The most important of these observations was the discovery by comparison of the records with those at the central station in Reno, 6,268 feet below, that frost forecasts can probably be made on Mt. Rose from twenty-

^{*} Weather Review, Vol. XXXIV., No. 6, pp. 255-263: "The Mt. Rose Weather Observatory."

four to forty-eight hours in advance of the appearance of the frost on the floor of the State, providing the weather current is traveling in its normal course eastward from the coast. The data thus obtained have been accepted at McGill University, Montreal, to confirm similar observations made since 1903 simultaneously, by means of a cable, on Mt. Royal and at the McGill College Meteorological Observatory, 620 feet below.*

Second only in importance to the first is the discovery and photographic recording of abundant evidence of the value of timber high up on the mountains, and especially on the lips of cañons, for holding the snow in check and preserving it in cold storage, so to speak, until late in the season.

Third, a systematic collection of data on mountain climatology† was begun preliminary to a study of plant environment by Dr. P. Beveridge Kennedy, botanist and horticulturist of the Nevada Agricultural Experiment Station, who has been making a botanical survey of the mountain with the rich reward of ten or more new species of alpine flora.‡ If the wild currant (Ribes Churchii) recently discovered, whose ripe fruit has been observed to withstand a temperature of 20° F. without injury, can be crossed with the domestic currant, this purely scientific phase of the work will have a distinctly practical result.

But perhaps quite as important from the point of view of obtaining summit temperatures in winter, as Professor McAdie desires, was the success of the thermometer shelter in automatically clearing itself of snow, even after the wildest blizzards. Through the slat bottom and sides

^{*} Monthly Weather Review (U. S.), November, 1906, Vol. XXXIV., No. 11, pp. 505-510: "Records of the Difference of Temperature between Mt. Royal and McGill College Observatory, and a Method of Local Temperature Forecasting." by C. H. McLeod and H. T. Barnes.

[†] A portion of this record will appear in an early number of Appalachia: "Summit Temperatures in Winter in the Sierra Nevada" (with their relation to winter mountaineering), by the writer.

[‡] Muhlenbergia, Vol. III., No. 2, February, 1907, pp. 17-32: "Botanical Features around Reno," by P. Beveridge Kennedy.

the wind cuts like a sand-blast into the congealed mass within until the interior is free from snow again. At the same time a hanging bottom placed a few inches below the chamber protects the instruments from the reflection of the sun upward from the rocks and from the possible effects of nocturnal radiation. The shelter is also so small that its parts can readily be carried on the backs of mountaineers to otherwise inaccessible peaks.

Dear to the hearts of Sierra Club members with an aching for winter mountaineering must needs be the experience of the volunteers who made the ascent during that first winter. A regular schedule was maintained irrespective of, and sometimes with disrespect to, the weather, and lurid were the tales brought back by the men who were having their initiation into the mysteries of the moods of Mt. Rose in winter. So large has the body of tradition grown that Professor Seward, of Stan ford, who has made the trip in order not to be unusual, facetiously proposes to collate the material into a "First Year with Mt. Rose" before the vividness of the experiences and the vigor of the tales have dulled.

Only a fact or two can be touched upon here. An average winter trip required from a day and a half to two days and a half from Reno, while from the head-quarters ranch at the eastern base of the mountain, where the ascent began, a winter day was all too short for the trip on snowshoes. Sleeping-bags and an ax, with a few provisions, were accordingly hung in an alpine pine at timber-line, and here, at 9,000 feet, from February until June, the parties spent the night on their way to the summit.

On the summit itself there was no protection of any kind except the lee of the monument, where, buffeted by gales and blizzards, bending like a brooding hen over the instruments to protect record-sheet and pen from the storm, the observers faithfully performed their task. Only twice did they fail. In April Professor Johnson and Dr. Rudolph spent the night at timber-line in a pit



DESCENT IN WINTER. (CATCHING UP WITH THE SCHEDULE.)



From photographs by the author. (ALTITUDE, 9,000 FEET.)

CAMP-TREE AT TIMBER-LINE.

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dug in the snow to obtain protection from a gale at the temperature of —2.5° F., and fought their way to the summit. But so withering was the gale at that altitude, even at midday, that a precipitate retreat was made to avoid freezing. The faces of the climbers showed plainly the punishment received. Three days later the writer attempted to rescue the record just as the storm was passing. He made his way in an impenetrable fog to 10,000 feet, when the snow and ice crystals deposited by the storm in a state of unstable equilibrium on crust and trees were hurled by a sudden gale high into the air in a blinding blizzard. During his retreat he wandered into the wildest part of the mountain before he escaped from the skirts of the storm.

The experience of Captain Robert M. Brambila in March has been repeated but once. During an evening trip to timber-line his legs cramped just as the party was crossing a wind-swept zone, and only by superhuman effort did he force himself upward rod by rod to the sleeping-bags a mile beyond. Though one of the smallest men in the United States military service, he pluckily continued the trip the next morning to the summit. In the exposure of the preceding evening the faces of both members of the party were frostbitten, though they fortunately escaped without further accident. Though he had served in the Philippines and shared in the relief of Pekin, Captain Brambila declared that he had never been so exhausted in any campaign he had made.

But this is physical. To the spirit, as it revealed itself at midnight and at noon, at twilight and at dawn, in storm and in calm, in frost-plume and in verdure, the mountain became a wonderland so remote from the ordinary experiences of life that the traveler unconsciously deemed that he was entering another world.

Naturally the project with its various interests made a strong appeal to all who came in touch with it. Plans for wider development grew rapidly. An observatory for the housing of observing parties and for mercurial barometer and other instruments was made possible through the generous offer of Singleton Charnock, a British ship's carpenter, and at present a student at the university, to construct the building. He had weathered Mt. Rose in one gale, but preferred the Horn twice to going through the experience again without a cabin aloft.

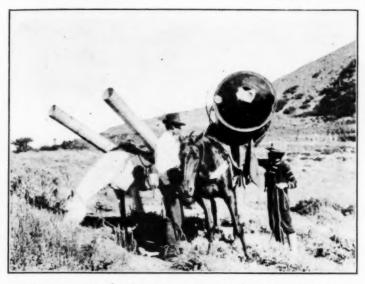
A thermograph and a barograph capable of furnishing a continuous record for at least five weeks were also planned in order that the value of the records might be increased with a minimum of physical exertion. An anemometer, or wind-gauge, with recording apparatus, was also planned to settle the question regarding the source of the violent pumping of the barograph during a falling or variable pressure, a marked peculiarity of every barographic record of passing storms.

A tank capable of catching and retaining the seasonal rain- and snowfall was suggested by Professor McAdie, as was also the borrowing of a set of evaporation-tubs from the Reclamation Service to continue the evaporation

observations begun on Mt. Whitney.

A request for funds was made to the Weather Bureau and to the university. At this point the passage of the Adams Act and its favorable interpretation by the Bureau of Experiment Stations prepared the way for an appropriation of five hundred dollars by the Nevada Agricultural Experiment Station on June 30, 1906, when the observatory became officially the Department of (Mountain) Meteorology and Climatology of the station. From this time the third period of the observatory's development should be dated.

Under this appropriation the observatory building was constructed during the late summer and autumn by a volunteer band consisting of Professor Johnson and Mr. Charnock, excavator and carpenter respectively; Mr. C. L. Brown, Captain Brambila, Frankie Folsom, and the writer, packers; and Mrs. Church, cook. Professors S. B. Doten and J. G. Scrugham prepared material at the home



CAPTAIN BRAMBILA'S MOUNTAIN BATTERY (THE PRECIPITATION-TANK) EN ROUTE.



TRANSPORTING THE THERMOMETER SHELTER TO THE SUMMIT — THE THIRTEENTH FALL.

From photographs by the author,

station, and others aided indirectly. No little credit is due the horses and "Socrates," the burro, who patiently endured the heavy loads of swaying lumber, though forced to plod over trailless slopes of shifting sand and rock.

The precipitation-tank was placed lengthwise on the back of old "Rowdy," the most sensible of the horses, in a cradle specially prepared for it, and by degrees reached the summit. Above timber-line a gale was encountered that blew the tank over to a horizontal position at the horse's side, where it was supported by the packer and the horse until assistance arrived. On being unlashed it escaped the grasp of its keepers and bounded wildly down the rough talus to some scrub, where it was allowed to remain for some days, until a favorable opportunity was presented of advancing it to the summit. There it now lies with fetters more secure than ever held Gulliver in the land of the Lilliputians. The sections of the long intake pipe suffered a kinder fate, and after an uneventful journey were safely anchored to the base of the thermometer shelter.

In due time, after many week-end trips and much exposure to early snows and cold, the observatory building was completed. It is eight feet square and seven feet high, and in contour and every appointment is a close imitation of a small ship's cabin. An observationwindow of plate-glass affords a panorama extending from Carson City on the east to Truckee on the west, with the expanse of superb Lake Tahoe in the center. Through a smaller window in the door the eye can range from the summits of the Sierra Nevada to Mt. Davidson on the Comstock Lode, with Sierra Valley, Lassen Buttes, Reno, and Pyramid Lake (the catch-basin of Tahoe) as intervening points. At Thanksgiving and New Year parties were storm-bound in the observatory for some days in tolerable comfort, with but little fuel and a temperature outside ranging from -4° to -6° F. In fact the entire supply of fuel for the winter, outside of

what has been packed by climbers, has been confined to fifty pounds of coal and one pack-horse-load of wood.

The mercurial barometer has been installed, and a portion of the ten-foot shaft designed to guard the precipitation-tank against freezing has been excavated. The bitterness of the winter weather has, however, delayed the completion of the task until the present time. A wind-vane with anemometer is also awaiting erection.

Owing to delays in the completion of the thermograph and the barograph, the generous offer to Mr. S. P. Fergusson to construct a meteorograph similar in design to the one made by him for the use of Harvard University on El Misti, Peru, (19,000 feet,) will probably be accepted. This instrument will furnish, on a single sheet, parallel records of temperature, air-pressure, velocity of the wind, and humidity. In this case a new shelter must be constructed to contain it.

At Professor Abbe's suggestion, an extra tank provided with a T-shaped intake pipe may be installed to determine, not the amount of snow and rain precipitated, but the amount latent in the atmosphere. A heliograph for use in signaling, especially in case of distress, will be added to the equipment when funds permit.

When the improvements in equipment already planned have been completed, the various problems already outlined will be further investigated. New data obtained on the February trip from Mt. Rose to Lake Tahoe and thence to Truckee serve only to confirm the earlier observations on the value of the timber in conserving the snow.

Particular attention will be given to the problem of forecasting frost and storm from the summit of Mt. Rose. If a second appropriation is made, auxiliary volunteer stations, equipped with thermograph, barograph, and wind-gauge, will be established at Brockway (6,225 feet), on State Line Point, Lake Tahoe, and at the headquarters ranch (6,000 feet), on Jones's Creek, on the opposite side of the mountain. The records furnished by these two sta-



THE OBSERVATORY IN TRANSPORTATION, SEPTEMBER, 1906.

(ARRIVAL AT THE SUMMIT.)

From a photograph by the author.

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tions, when compared with those of the summit station (10,800 feet) and the central station (4,532 feet) at Reno, should furnish valuable data on the approach of the weather and the falling of storms and frosts from higher altitudes. If this experiment should prove successful, similar volunteer stations will be established in the valleys to the east to determine by comparison of the individual records with those of the summit station the method of forecasting the local frost.

If means sufficed, kite observations could be made, as Mr. Fergusson has suggested, on the meteorological characteristics of the free air at the elevation of Mt. Rose, as is being done at Mt. Washington.

This third period of the observatory's development stops short, however, of rendering full service. Since the weather at higher elevations is believed to exert a strong influence on the weather at the surface of the earth, and is more uniform than the latter, the practical function of the observatory should be to furnish constant indication of weather changes at its high altitude to the central station below. To accomplish this either an observer should be stationed at the observatory with wire or wireless communication, or a cable should be extended from the instruments to dials in the central station office. When such equipment has been obtained the fourth and last period in the development of the Mt. Rose Weather Observatory will have begun.

RENO, NEVADA, April 24, 1907.

THE ASCENT OF ASAMA-YAMA.

BY THE REV. PROFESSOR EDWARD A. WICHER, Of the San Francisco Theological Seminary.

It was 7 o'clock on a perfect August evening when amid the first settling shadows we gathered in preparation for our ascent in the street of the little village of Karuizawa. Dominating the whole valley rose the mighty bulk of old Asama, 8,160 feet above the level of the sea, 4,200 feet above the level of the valley in which the village nestles. Between us and Asama was the lesser height of Hanare-Yama, the mysterious mountain of the cave of bats, which rose 1,500 feet above the village. Upon the other side of the valley beyond the fields rose the gentler elevation of Usui-toge, which from this side gave no intimation of the awful precipice just beyond our view; for upon yonder height one stands at the edge of the plateau. Behind us rose the low hill of Atago-Yama, with an ancient Shinto shrine clinging to its steep sides and a covering of long bamboo grass, in which a bear was captured only the week before. Behind Atago the hills stretched out in long green ridges, constantly increasing in height from Fuji-mi to Iriyama.

The village itself is something more than the ordinary Japanese village. Its main street is wider and straighter than such streets usually are. In the days of old Japan, when the Shogun still ruled in Tokyo, and the processions of daimyos passed through the country every year to pay their tribute of rice and honor unto their feudal sovereign, Karuizawa, being a chief stopping-place on the Nakasendo road, situated at the head of the pass in the mountains whence the paths run down from the great middle plain to the sea, was a thriving, busy little place filled with good old-fashioned inns and courteous



THE MAIN STREET OF KARUIZAWA.

From a photograph by the author.

Maleti

hospitality. Now it has a new lease of prosperity in the advent of the foreign visitor. Englishmen in white duck suits and white helmets and Americans in summer flannels move through the streets and mingle in the scene with the naked 'rickshaw coolies and the silk-kimonoed native gentlemen.

Now our guides were bringing around our horses, fastening their American saddles upon their backs, shortening and lengthening their stirrups, and dividing up among themselves the bundles of warm clothing, boxes of provisions, and bottles of water. Prominent in the equipment of every mountain-climber of Japan are the waraji, or straw sandals, which are the only proper footgear for the lava-covered slopes of the highest mountains. Heavy leather boots are a burden and painful for the feet; and climbing-boots of lighter leather are soon cut to pieces upon the sharp edges of the broken lava. But the waraji take nothing from the free spring of the foot, and with the thick tabi, or short blue sock, they afford an effective protection against the sharp loose stones.

The sun had already passed in veiled splendor behind Asama when we set forth from the village. There was a considerable concourse of both Japanese and foreigners, who gathered at our starting-place to cheer our departure. The Japanese always take a kindly, curious interest in the doings of the foreigners. They want to know why they like to do such things. For instance, why should any company of sensible men, who had no business to do upon mountains and no pilgrimage to make, set out upon this hard journey? Clearly these foreigners make much labor of their pleasures. We saw the dusky faces touched with pink in the reflection of the sunset glow. We heard the head betto shouting his directions to his subordinates, one of whom ran beside every horse. We shouted back our answers to the jovial calls of our friends who stood in the streets and at the windows of the Mampei hotel, and passing among the kindling lights

of the houses we emerged into the fields, a company of nine, who intended to reach the summit of Asama before the dawn.

For three hours our route lay in the plain around the base of Hanare to the village of Kutsukake. This little hamlet was asleep, shuttered, and dark when we arrived, but soon waked up and while our guides smoked a pipe of refreshment came out to look at us and to offer for sale bean-cake and soda-water. From this time onward we were climbing up the valley which lay between Hanare and Asama upon a slope which was gentle at the beginning but steeper with every mile traversed. We soon rounded the southern end of Hanare, thus placing it between us and the village of Karuizawa. was still upon our right as we traveled northward, while on our left was a broad, deep valley which lay between us and Asama, and which became narrower and deeper as we rode forward. At the head of the ravine was a connecting ridge across which the road passed from Hanare to Asama. Just as we entered the valley a heavy mist settled down upon us, diffusing an icv chill and making it almost impossible for one of us to see his hand before his face. The nine horses went in single file along the narrow path which wound around the side of Hanare, looking up the height of the mountain on the one hand, and on the other looking down over a precipice, which in some places fell away to the black depth of a thousand feet. There were places where a single misstep of a horse in the darkness would have thrown its rider to destruction. But just then this was hidden from our eyes; it was only upon the return journey on the morrow that we saw.

At intervals the head betto called in signal to the others, and they answered each in turn, the sounds, muffled in the darkness and dampness, coming as though from out of a great distance. Then after an interval a sleepy echo was stirred in the steep sides of Asama across the chasm. The paper lanterns glimmered dimly

one beyond another, not localized in space, but suggestive rather of bright disembodied spirits moving across infinite tracts of gloom.

Thus we traveled until midnight, when we reached the connecting spur of Asama which runs down to Hanare. We were now at the head of the valley between the two mountains, and the main trail suddenly diverged to the left and turned directly towards the great moun-For a few moments we saw the procession of wavering lights describe a wide semicircle and then gradually straighten itself out again. Then the line quickly became more definite, as lantern by lantern the whole company emerged from the mist and marched forward under the clear shining stars. We had climbed until we had left the clouds beneath us. All around us was the splendor of a perfect August night. Above us was the great dome, vast and of cerulean blue, ruled by the late-rising moon and guarded by innumerable hosts of stars. And now the monstrous Asama, seen thus startlingly close to us, reared its great bulk with overwhelming impressiveness. The bright light fell upon the brilliant red and yellow patches of burnt lava and made them gleam like opalescent glass. But where the cañons lay in the shadow there was deep darkness, black, threatening, and awful-a place where evil spirits might dwell, and whence there might issue wandering lights to lead astray unwary travelers-an entrance to Inferno. Our guides cried out prayers to Amaterasu, "the heaven shiner"; to Atago, "protector from fire"; and to their own Dosojin, "God of guides." Beneath us the clouds, glistening under the moon-rays, rolled in soft, silvery masses down the long valley. A gnarled pine tree, centuries old, which had in some extraordinary manner survived the repeated eruptions of destroying lava and cinders, stretched its long contorted limbs across our path and stood for a moment silhouetted against the disk of the moon. A bat, perplexed by the light of the lanterns, flew into the face of the traveler in front of me. Then we heard two owls hooting one to the other among the trees that rose in order down the mountain-side. We heard them, but we could not see them. Then my guide began one of those interminable native songs which start on a high-pitched note, drop to a note below, and then resume on the high note in a long drawn-out quaver. The other guides joined in at intervals, and the mountains repeated the refrain over and over again.

Suddenly the horses of their own accord turned from the road and plunged into a thicket. Thinking at first that they had been frightened, we tried to head them about, but finding that they understood their own business better than we did we let them take their way. Soon we were scrambling in single file up a steep, rough path that led to the shelter of our halting-place.

On the western side of Asama and about three thousand feet below its summit is a smaller mound, some five-hundred feet in height, known by the name of Ko-Asama, which means that it is an excrescence upon Asama. Between this smaller mountain and the greater there is a pretty little valley, in which grow trees and grass. And here before climbing, in the half-light of the lanterns, amid the shadows of the moving branches, we made a fire and took our midnight meal.

After we leave the valley there is no longer any tree or shrub of any kind—nothing but the stretches of barren lava, red and yellow, sometimes rough and irregular, like the clinkers from a coal furnace, sometimes broken off and leaving sharp edges. The first five hundred feet above the valley is known to mountain-climbers in Japan by the suggestive name of "Hard Scramble." In some places the path is almost precipitous. In other places the lava is loose and dried to a fine powder, so that the climber slips backward almost as much as he advances and is choked with dust. Happily for us there had been a heavy rain only the day before, so that, stepping carefully, we found the lava much firmer to our tread than is usual.

After the conquest of "Hard Scramble" comes the long steady pull of 2,700 feet to the summit. Here the path is very even, and in two hours one can without difficulty accomplish the rest of the distance.

We reached the top just before sunrise. The first pink streaks of promise were already appearing along the eastern horizon. We seated ourselves in a sheltered place, in an opening of a cleft in the rock, on the northwest side of the crater, to watch the coming of the dawn. In spite of the fire beneath us, the air was bitterly cold. We wrapped ourselves in the heavy coats and rugs which we had brought with us. Then the miracle began. The soft flush grew deeper and spread; the gray atmosphere became amber, and then pink, and then saffron; the mountain-peaks of the whole empire were awaking to a new day of light and majesty. Northwards lay the range of Shiranesan, which infolded between two peaks the clear, deep waters of Lake Haruna. To the northwest we could see Akagisan, which held within her bosom the rich treasures of copper and all the raw material for Japan's arts of bronze. Over the shoulder of Akagisan rose the peak of Nantaisan, standing guard over the tombs of the Shoguns in Nikko. Directly before us were the rocks of Myogisan, and beyond Myogisan the ripening grain in the plain of Tokyo, and beyond the plain of Tokyo the thousand leagues of tossing water of the Pacific.

At first we could not find Fuji. But then the clouds in the south parted, and Fuji, peerless Fuji, his white head swathed in golden light and his sides enveloped in soft cloud, lifted himself to our vision above the one hundred and twenty miles of hill and plain that intervened.

No one who has not beheld the sight can imagine the beauty of clouds seen from above under the light of sunrise. They were white,—whiter than anything else in the world,—giving us our best conception of the purity of the Creator. Then the light came upon them from

above, making them golden, and up through them from beneath, making them crimson. At first the light was a gentle suffused glow. Then it spread and kindled, billow upon billow, until the whole heavens were aglow. And then the great sun shot up vast rays like searchlights from beneath the horizon, rays which at length overcame and expelled the shadows and charged the clouds with all the colors of the spectrum.

With the full light of day we turned our steps backwards and upwards towards the crater itself. The circular rim is about three fourths of a mile in circumference, and of unequal height, some parts being as much as two hundred feet higher than others. It is possible in some places to approach almost to the edge and to obtain an excellent view of the interior. It is an awful scene. Out of the red and yellow walls there shoot jets of flame and steam. A heavy sulphurous smell fills the air. The bed of the crater is about three hundred feet below the rim and about thirty acres in extent. Between the rushes of smoke and steam we could catch glimpses of the bottom. Intermittent fires sprang up and sub-At intervals there came a choking, gurgling sound, and there arose boiling water and seething ashes, which sank again as suddenly as they had risen, giving forth clouds of sulphurous smoke and steam, and then all was quiet again for a time.

There was a fascination in the horror of the place—that sort of fascination which draws men to throw themselves headlong in order to experience the full extent of the horror.

Only two weeks prior to our visit two young Japanese had committed suicide there. They were students in the department of diplomacy in the University of Tokyo, and having failed to pass the examinations which would have admitted them to appointments they were seeking, they "succumbed to the inevitable" and hurled themselves out of the world. What must have been the thoughts of these two young intellectuals as under the







ASAMA-SEEN FROM KARUIZAWA.

From a photograph by the author.

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midnight stars they struggled up the height of "Hard Scramble," with no eye upon them save that of the Omnipotent, laboring to win their victory over Asama only to throw themselves as victims upon her altar! What did they think, when they were thus by themselves, face to face one with the other, separate from the rest of the world through the awful resolution which bound them together? They thought only of the dishonor which had come upon them by failure at an examination and of their purpose of cleansing away the stain by death. This is the spirit of the old Japan manifest under the forms of the new.

It is always safe to go around three sides of the crater, always a little dangerous to go along the fourth side—the side toward which the wind is blowing. But there were two of us in the party, young men, alert and athletic, who had also some scientific interests to further, who felt that the excursion would be well worth whatever danger was involved. Upon this day the southwest side was the dangerous one.

We set out with camera and field-glass, and ran for a short distance during the lull between two gusts of steam and sulphur. Then we lay flat, buried our faces in the loose lava, drew whatever air we could out of the ground, and waited until the way was clear for another dash. Between these dashes we obtained some excellent pictures and were able several times to see at close range the movements of the elements in the gulf beneath. Our friends watched us from a high point of vantage upon the other side. The whole period of time occupied by the run through the sulphurous clouds was some twentyfive minutes. When we came forth, our eyes were almost blinded for a time, and our throats and nostrils were so burned that they did not recover for two weeeks. But we would not have missed the round trip for a much greater amount of discomfort than we actually suffered.

After the encircling of the crater came breakfast, to which, in spite of the sulphur, we were ready to do

most ample justice. Three of our guides had been left in the cleft of the rock to prepare the meal. It was interesting to see one of them scrape a hole in the earth and place in it our eggs and bottles of milk, which were thus warmed by the natural heat of the mountain.

The clouds rolled out vast beneath us. They were again of dazzling whiteness under the light of the sun, which was now above them and us. Occasionally, when they parted, we had fleeting views of Karuizawa and picked out our homes and the well-loved, familiar objects of the village. We felt a pity for the less happy people who were content to live in the valley and never climb.

Then for a time after breakfast we sat upon the west side of the mountain, where there were no clouds, and looked out over the weird lava beds, the valley of the village of Komoro, and the mountains of the west coast range, which reared their snow-capped peaks beyond.

One must say a word about the lava beds. They are the product of the last great eruption of Asama, which in the summer of 1783 rolled down a molten stream ten miles wide over a primeval forest and the peaceful villages of many happy farmers. After a hundred and twenty-three years the lava beds continue as in the first year, huge, shapeless masses, on which nothing grows, piles of burnt-out clinkers twenty-five feet high, full of dark chasms over which no roads are made. There is no place in the world where one will get a deeper impression of monstrous Titanic might than here.

While it is cold upon the mountain-top, it is hot in the plain beneath, and if we would not travel across that plain under the fierce heat of a midday sun, we must now make ready for return. It is quicker going down than going up; and we return easily, running, jumping,

sliding, and slipping, ever downwards.

After we had left the crater some distance behind us, one of our guides suddenly called to us to look around. Old Asama, in honor of our departure, had sent forth a sudden tremendous eruption of steam and lava. It

mounted upwards in one great pillar as high again as the height of the mountain and then spread out on all sides into a vast canopy which hid the heavens. It was an awe-inspiring sight. Then the ashes began to fall about us.

SIERRA CLUB BULLETIN.

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Annual Dues, \$3.00.

The purposes of the Club are:-"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Moun-

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REPORTS.

REPORT OF THE SECRETARY,

MAY, 1905 - MAY, 1907.

The names of the recently elected Board of Directors and of the officers selected by them are set forth on another page of this BULLETIN.

Owing to the destruction of the official records and data of the Club on April 18, 1906, it has been impossible to present to the Club a more accurate report as to its condition in May, 1906, than has been given in the Circular Letters.

In May, 1905, the total membership was 858, and it is now 904. Of this number 93 are new members who have joined since May, 1906. The membership is now nearly what it was just prior to the fire. We lost quite a number of members through the revolutionary change of addresses which followed, and a few more resigned than would have done so under ordinary circumstances. We are now approaching the 1,000 mark, and by energetic work in securing new members we should have that number by the end of another club year.

Though the fire also interfered somewhat with the payment of dues, and, consequently, we did not receive quite as much from this source as during the preceding year, and while our printing bills for the replacing of all of the Club's circulars, by-laws, application cards, etc., which were destroyed, and certain other expenses, have been heavier than they will be another year, yet this has been more than offset by the saving of office-rent, for the headquarters of the Club have been at the home of the Secretary during the past year. We have, therefore, a larger balance on hand at the beginning of the Club's fiscal year than ever before.

We hope by January, 1908, to have secured and opened to our members and the public a suitable office and clubroom in some down-town building in San Francisco. This, together with other important advances in the Club's work will necessitate using a greater amount of money for current expenses than formerly, and this must be met by the dues derived from an increased membership. We have on hand in the Refurnishing Fund \$257.58, but hope to double this amount before we will have to furnish the new rooms. We wish the equipment to be complete in every respect, and we can promise our members a much better-furnished

and finer headquarters than ever before. Those who have not subscribed to this fund and are able to do so will kindly remember it.

The accessions to our new library have been noted in our circular letters from time to time, and indicate that we will start with a splendid nucleus for a mountaineering library. Since our last circular was issued the Government Survey of Canada has sent us duplicates of all its publications which are still in print.

The King's River Report which was published in our last BULLETIN will doubtless do a great deal toward attracting attention to that region, and we already have promise that certain of the recommendations made in the report as to construction of trails and bridges will be carried out in the near future by the Forest Service.

We plan to issue a similar report on Yosemite Valley and its needs in the January, 1908, BULLETIN, and endeavor to secure a large appropriation for the improvement of the valley and the surrounding national park from the next Congress. Since we will visit this region on our Outing this summer, we will be in a position to render a comprehensive and intelligent report.

This Outing promises to be a splendid success in every way. The heavy winter will make the falls especially attractive, and the High Sierra will be most picturesque with its mantle of snow.

During the fall of last year we secured, through the courtesy of Mr. Chas. F. Vogelsang and the State Board of Fish Commissioners, 5,000 rainbow trout fry, which were planted in Copper Creek of the King's River Cañon, and also 15,000 Eastern brook trout fry, which were planted in the hitherto fishless waters of Paradise Valley. The success of this commendable enterprise is due to the generosity of certain members of the Club who subscribed to a fund to cover necessary incidental expenses, and also to the generous services of Mr. Gallagher, of the King's River Stage Company, and to Mr. P. A. Kanawyer, of Millwood, who assisted in the very difficult transportation of the fry. This is work which the Club could undertake and direct to great advantage. No one thing will do more to aid in popularizing and attracting travel into our mountains than the systematic stocking of the vast number of lakes and streams in our High Sierra that are admirably adapted to fish life and yet have none whatever. In places a very little work will accomplish the desired result, and again it will take money and time to stock certain less accessible regions.

Through the generosity of Mr. Alden Sampson, our die has been replaced, and stationery stamped with it may be obtained of Paul Elder & Company, Van Ness Avenue, San Francisco. Particular mention is made of this fact, for it will help the good work of the Club if the members will use this stationery generally in their correspondence. Anything which makes the Club better and more widely known will strengthen and extend its sphere of influence. It is a pleasure and a privilege to be able to use stationery which is so artistically beautiful.

The Sierra Club is destined to become one of the greatest clubs of its kind in the world. Our mountains and world-famed scenery are near at hand, and as time goes on the work of this Club grows in importance. Let us see that we do our part to assist.

Respectfully submitted,

May 4, 1907. Wm. E. COLBY,

Approved by the Board of Directors. Secretary.

REPORT OF THE TREASURER.

TO THE DIRECTORS OF THE SIERRA CLUB.

Gentlemen: I beg to submit the following report of the finances of the Sierra Club for the year ending May 4, 1907.

All records prior to April 18, 1906, were destroyed by the San Francisco fire of that date. The only record of our balance after April 18th was that furnished by the San Francisco National Bank, as given below. This balance was used for clearing off what bills had been contracted before the fire.

REPORT FOR 1905-1906.

GENERAL FUND.

Cash on hand April 18, 1906	\$	550	77
Balance on Bulletin No. 34, C. A. Murdock & Co	S	257	40
Clerical work for twelve months, at \$15 per month		180	00
Rent of 316 Mills Building for March and April		50	00
Stamps and stationery		37	55
Rent of telephone from January to April, 1906		4	05
Sundries, express, wires, etc		16	00
	\$	545	00
Balance on hand May 6, 1906.		5	77
	\$	550	77

REPORT FOR 1906-1907.

GENERAL FUND.

Receibts

Receipts.			
Cash on hand May 6, 1906	\$	5	77
Cash received from Wm. E. Colby, Secretary	2	2,714	75
Cash received from Addie Lathrop, Stenographer		3	00
Cash received from C. A. Murdock & Co		20	00
Total cash received	\$2,743		52
Expenditures.		-	
Printing of Bulletin No. 35	\$	677	60
Stamps and stationery		293	05
Clerical work for twelve months, at \$15 per month		180	00
Printing of circulars and notices		120	25
Typewriting		100	75
Advertising expenses		78	75
Le Conte Memorial Lodge expenses		74	35
Distributing of BULLETINS and circulars		66	40
Transfer to Refurnishing Fund		30	00
Express on books from the East		20	35
Walk advertisements in the San Francisco Chronicle		. 5	80
Sundries, telegrams, etc		20	95
		,668	
Balance cash on hand May 4, 1907	I,	.075	27
	\$2,	743	52
PERMANENT FUND.	-	-	
(From Life Memberships.)			
On deposit in Security Savings Bank	\$	357	45
REFURNISHING FUND.			
On deposit in Mechanics' Savings Bank	\$	257	58
** ***			-

Very respectfully,

JOSEPH N. LE CONTE,

SAN FRANCISCO, CAL., May 20, 1907.

Treasurer.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magasine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at 2901 Channing Way, Berkeley, where all the maps, photographs, and other records of the Club are hept.

The Club would like to secure additional copies of those numbers of the Sirran Club Bulletin which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.

ALPINE CLUB, LONDON, February 8, 1907.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: It is with much sympathy and with great regret that we hear of the severe loss that your Club suffered during the disaster which last year overtook San Francisco. We have instructed our publishers to send to you those numbers of the Alpine Journal which are still in print,—viz. Volumes 16 to 22 and number 171. We are sorry that we are unable to supply earlier volumes, as they are quite out of print. A set of the first fifteen volumes would cost about £17. Should you wish us at any time to look out for a set for you, we should be very glad to assist you in the matter.

I remain, on behalf of the Committee of the Alpine Club,

Yours faithfully,

E. H. F. BRADBY,

Honorary Secretary.

DECISIONS OF THE UNITED STATES GEOGRAPHIC BOARD.

The following important decisions relating to geographic names and their application were made by the United States Geographic Board on February 6, 1907. In reaching these decisions the Board has obtained the advice of many of the foremost American geographers and geologists, and the decisions here given are, in nearly all cases, the result of a consensus of opinion among the gentlemen consulted.

Cordilleras—the entire western mountain system of North America.

Rocky Mountains—the ranges of Montana, Idaho, Wyoming, Colorado, New Mexico, and western Texas.

Plateau Region—the plateaus of the Colorado River and its branches, limited on the east by the Rocky Mountains, on the west by the Wasatch Range, and extending from the southern end of the Wasatch southward, southeastward, and eastward to the eastern boundary of Arizona, following the escarpment of the Colorado Plateau, and including on the north the Green River Rasin.

Basin Ranges—all those lying between the Plateau Region on the east, the Sierra Nevada and Cascade Range on the west, and the Blue Mountains of Oregon on the north, including the Wasatch and associated ranges.

Pacific Ranges—the Cascade Range, the Sierra Nevada, and the coast ranges collectively.

Sierra Nevada—limited on the north by the gap south of Lassen Peak, and on the south by Tehachapi Pass.

Cascade Range-limited on the south by the gap south of Lassen Peak and extending northward into British Columbia.

Coast Ranges—extend northward into Canada and southward into Lower California, and include all mountains west of Puget Sound and the Willamette, Sacramento, and San Joaquin valleys, and southwest of Mohave Desert.

Bitterroot Range—extends from Clarke Fork on the northwest to Monida, the crossing of the Oregon Short Line, on the southeast, including all mountain spurs.

Mission Range-range east and southeast of Flathead Lake, Montana.

Wasatch Range—includes on the north the Bear River Range, extending to the head of Bear River at Soda Springs, Idaho, and on the south extends to the mouth of San Pete River, near Gunnison.

San Juan Mountains—include all the mountains of southwest Colorado south of Gunnison River, west of San Luis Valley, and east of the Rio Grande Southern Railroad.

Sacramento Mountains-include those groups known as Jicarilla, Sierra Blanca, Sacramento, and Guadalupe.

Salmon River Mountains—include the group in central Idaho lying south of main Salmon River, west of Lemhi River, north of Snake River, and east of the valley of Weiser River.

Blue Mountains—include all the mountains of northeastern Oregon with the exception of the Wallowa Mountains, and extend into Washington. Sangre de Cristo Range—extends from Penoha Pass, Colorado, to the neighborhood of Santa Fe, New Mexico, thus including the southern portion locally known as the Culebra Range.

Front Range—includes on the north the Laramie Range as far as the crossing of the North Platte, and on the south includes the Pikes Peak group.

Appalachian System—includes all the eastern mountains of the United States from Alabama to northern Maine.

Blue Ridge-includes the ridge extending from a few miles north of Harper's Ferry to northern Georgia.

Appalachian Plateau—includes the entire plateau forming the western member of the Appalachian System, known in the north as the Allegheny Plateau and in the south as the Cumberland Plateau.

Ozark Plateau—the plateau in northwestern Arkansas and southern Missouri.

Ouachita Mountains—the ridges of western Arkansas, south of the Arkansas River, Indian Territory, and Oklahoma.

The following extracts from the Report of Department of Highways, published in December, 1906, relative to the King's River Cañon Road, will be of interest to the members; the first extract is from the letter of the State Highway Commissioner and the Deputy County Surveyor of Fresno, describing the preliminary investigation, and the second is the report of work already undertaken:—

"It will be found that the beginning should be at the end of a wagon-road built through the General Grant National Park to the northeast gate, a short distance from the summit of the divide which must be crossed, then ascending this ridge and crossing it, whence the line should descend the drainage basin of the Ten-Mile Creek to a point near the end of a road now terminating on Ten-Mile Creek. This distance must be covered in a manner that will permit of a good grade, and therefore its particular line would be left to the work of survey. From this point it would run down the right bank of Ten-Mile Creek on the most advantageous ground, gradually descending to the South Fork of the King's River just below the lower one of the three limestone points named Windy Cliff by the Geological Survey; thence up the South Fork to a point nearly opposite Grizzly Creek, where the river is to be crossed and the line continued on comparatively flat ground as far as may be required.

"By this route, the road will contain no adverse grades from the first ridge east of the park to the river. The drop in elevation from this ridge to the previously mentioned point on Ten-Mile Creek is 2.200 feet, requiring 6.6 miles of road at six per cent to make the descent. From the Ten-Mile Point to the South Fork of the King's River the difference in elevation is 1,700 feet, requiring, with flattened grade at some rough points, six miles of road to bring the line within one mile of Boulder Creek. Thence up the river along the talus earth and rock of the south side on the grade of the stream, which is one hundred feet per mile, about eight miles to the open valley, or beginning

of the floor.

"Allowing for curvature, the road should be about seven miles from the park ridge to the Ten-Mile Creek; with the additional mile from park to the top of divide, making eight miles to the point where the McKay survey diverts. From here to the river proper is another seven miles, and along the river to the open valley eight miles. In all, the total distance from the park-line to the west end of the floor of the valley proper is twenty-three

or twenty-four miles.

"This route best complies with the conditions named above as prime requisites for the location. Not only will it give an excellent grade from the park to the cañon, but it will form a central line from which roads or trails may be built to points of interest. The Tehipite Cañon may be readily reached by trail. The big trees in the small cañons to the south will be of easy access, and the great rocks and cliffs of the cañon along the roadline will be no small item of interest. In fact, such a road will open a part of the Sierra Nevada Mountains of exceeding and unusual beauty. To within about five miles of the river on this route the line would run through timber, after which brush will be encountered until the river is reached, when along the river brush and timber intermingle."

"As all preliminary business incident to the beginning of work had been completed, a surveying party was placed in the field, the first camp being pitched at Huckleberry Meadow near the General Grant National Park. The park being one of the statutory termini of the route, work was commenced July 4, 1906, at the northeast park gate in extension of a good park road.

. . . Camp was changed once to Ten-Mile Creek, and the survey in that time extended from the northeast gate of the General Grant National Park, on a very easy rising grade, to the summit of the divide near the head of Indian Basin. At this point, about two miles from the starting-point, the divide was crossed in a sag and the survey continued along the north slope of a ridge extending toward Ten-Mile Creek until by a gradual descent Ten-Mile Creek was crossed at nine and one-quarter miles. A very large proportion of the route is over earth, with perhaps in the foregoing distance one and one-half miles of solid rock or boulders, which does not present any difficulties of construction. After crossing Ten-Mile Creek, whence it continued toward the cañon of the South Fork of the King's River. Upon my arrival in camp, September 7, 1906, two miles of survey had been made beyond Ten-Mile Crossing, thus making an excessive walk for the help. Consequently, the following Sunday, September 9, 1906, camp was removed to Redwood Creek, and I assumed personal charge of the work. We continued the work with the crew reduced by four men, to the ridge known as Horseshoe Bend, where, at the distance of twenty and one-quarter miles, near Windy Cliffs, work was suspended, on account

of the long distance from camp, until next year. In the country traversed perhaps the most difficult of construction is between Lockwood Creek and Redwood Creek, where considerable solid and loose rock could not be avoided. After crossing Redwood Creek, however, the ground was good, so that the line was switched back for two complete turns to get down to the river, and on to the Horseshoe Bend ridge. The route selected under the provisions of the statute will clearly make the finest scenic road in the whole State. The purpose of the road was to open up the great King's River Cañon, and by the line now partly surveyed there will be no greater pleasure road."

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADE.

A decade or more ago there appeared a popular " MOUNTAIN guide to the wild flowers of the Eastern States WILD FLOWERS by Mrs. Starr Dana which enjoyed great pop-OF AMERICA." ularity. Mary Elizabeth Parsons provided a similar work for Californians under the title "Wild Flowers of California." Now Julia W. Henshaw, following the same plan, presents us with a book* on the wild flowers of the American mountains. It is a book of more than ordinary interest to members of the Sierra Club. Not only the botanically inclined mountain-climber, but also the occasional sojourner among the mountains, will find here impulse and means to fill his hours with enjoyment. Like her predecessors in this type of "Who's Who" in the flower world, the author adopts the color scheme of arrangement for her material. Only two chapters, "Flowering Shrubs" and "Miscellaneous," are an exception to this. A notable and highly commendable feature of the book consists in one hundred and one beautiful full-page half-tone reproductions of photographs taken by the author. The descriptions are not technical in the botanical sense, and yet convey accurate information. Both the botanical species name and an English name are given for each plant. With the aids provided, it ought not to be difficult to identify most of the wild flowers that catch the wayfarer's eye among our northern mountains. Were the reviewer inclined to be critical in discussing so excellent a piece of work, he would have to confess to a wish for a less inclusive title. A cursory glance at the species described makes it apparent that it is primarily adapted for use among the mountains of Canada and the northern United States. Fortunately this does not operate greatly to the disadvantage of Californians, partly because mountain wild flowers exhibit a strong community resemblance in widely separated regions, and partly because the species not found in the California mountains are in most cases replaced by closely related species. We feel sure, therefore, that this book will make many friends as a guide to the beautiful blossoms of

^{*} Mountain Wild Flowers of America. By Julia W. Henshaw. Ginn & Company, Publishers, Boston, Mass. Pp. 384. 101 illustrations. \$2.00 net.

the high places. The imprint of the Athenæum Press of Ginn & Company is a sufficient guarantee for the typographical excellence of the book. The half-tones are remarkably clear and beautiful.

The Journal of the Royal Geographical Society of London (for February, 1907) gives the address delivered before the Society by the Duke of the Abruzzi. It is the Duke's account of his ascent of the peaks of the Ruwenzori Range in Africa. Thus is finally solved the riddle of the Nile. Ptolemy located these mountains on his map, but later geographers grew skeptical about their existence and wiped them from their maps. In 1889 Sir Henry Stanley climbed one of the northwestern spurs to the height of 10,677 feet, and gave to the range the name Ruwenzori -i. e. "Rainmaker." The mystery that has hung over these mountains so long is probably in part due to the fact that they are so seldom seen, even by those dwelling in their vicinity, because they are perpetually wrapped in clouds. The natives are said never to ascend above six or seven thousand feet. The Duke of the Abruzzi, who has many first ascents to his credit, took with him some of the guides and scientists who accompanied him on previous mountain-climbing expeditions. The impedimenta of the party, packed in fifty-pound cases, were transported through many miles of wilderness on the heads of native porters. Each case of provisions contained food for twelve persons for one day, soldered in tin with a light wood covering. The entire expedition, when it reached the foot of the highest mountain, numbered about four hundred natives and ten Europeans. The actual ascent of the highest peak was made on the 16th of June, 1906, by the Duke and three guides. The twin crests of the mountain were named Margharita and Alexandra, in honor of the queens of Italy and of England. There are six peaks in the Ruwenzori Range, connected by saddles having an altitude ranging from 13,800 to 14,400 feet. The following are the altitudes determined for the peaks, together with the names given to them: Margharita Peak, 16,810 feet; Alexandra Peak, 16,744 feet; Mt. Speke, 16,080 feet; Mt. Baker, 15,988 feet; Mt. Emin, 15,807 feet; Mt. Gessi, 15,647 feet; and Mt. Thomson, 15,273 feet. These names have been approved, and will doubtless remain, except the last, which the President of the Royal Society took the liberty of changing to Mt. Luigi di Savoia, in honor of the Duke of the Abruzzi, who first ascended and mapped the range.

FORESTRY NOTES.

EDITED BY G. B. LULL.

FORESTRY WORK IN CALIFORNIA.

An appointment as Assistant State Forester of California. Mr. Smith assumed his new duties on May 1st. Mr. Smith secured his technical training at Cornell University. The position was made vacant by the resignation of Raymond Tyler, who resumed work for the Forest Service after a furlough of one year.

State Forestry work in California is showing increased activity with the opening of the dry season. The State Forester is busily engaged in securing the financial co-operation of county boards of supervisors in an attempt to prevent and extinguish forest fires. Last year eleven counties, mainly in the southern part of the State, appropriated sums for this purpose ranging from \$250 to \$1,500 per county. Although the fire season is only just opening, two new counties in the northern part of the State, which has always been considered as a region indifferent to forestry, have been secured. These are Lake and Mendocino, which have appropriated \$500 each. It is hoped that before the close of the present dry season many more counties in the northern part of the State will be won over.

Associations of stockmen and irrigationists which have always been interested in preventing forest fires are exhibiting unusual interest this spring. The State Forester is co-operating with many powerful organizations of this kind, all of which are paying the salaries and expenses of the patrolmen who have been appointed fire wardens. Several lumber companies are also showing gratifying interest.

The planting season in California has ended. During the past winter the State Forester has co-operated with the Union Lumber Company, Fort Bragg, which is one of the largest owners of redwood timber on the coast, in furnishing a planting plan for the interplanting of eucalyptus with redwood sprouts on land cut over by this company. The redwood sprouts are of varying ages, but in most cases stand too far apart to produce merchantable trees. The object of interplanting with eucalyptus is to force

these sprouts into rapid height growth by the lateral shading of the more rapid-growing eucalyptus.

Co-operation with the Central Counties Land Company, which owns over 35,000 acres of land on Clear Lake in Lake County, has resulted in the construction of a lath-house 40 by 128 feet in area for the propagation of eucalyptus and ornamental species, which will be used for commercial and ornamental planting on the holdings of this company. The land of the company extends in a narrow strip around the borders of the lake, including a frontage of seventy-four miles, and includes also blocks of varying area located in the valleys four or five miles back from the lake shore. The object of planting is to ornament the holdings near the lake, which will be sold for residence purposes, and to establish commercial plantations on the holdings remote from the lake, where colonies of settlers will be placed. Actual planting will be commenced next winter with the seedlings grown in the lath-house now under construction at Lakeport.

Assistant State Forester C. H. Sellers is in charge of the construction of the lath-house and the establishment of the nursery.

Two important bills relative to State forestry were introduced in the last legislature. One provided for the assembling of all provisions relating to punishment for setting forest fires; for the more certain conviction of those arrested, and for the more equal distribution of the fines collected. This bill became a law. Under its provisions the dry season, which was formerly defined as "the period between May 15th and the first soaking rains of autumn or winter," was changed to read "a dry season." In the past some trouble has been experienced in that defending attorneys have sought to prove that "a dry season" did not actually exist at the time when fires were started, because in some cases a little sprinkle has occurred between that time and the previous May 15th. The fines, which formerly varied from \$50 to \$1,000, were changed to \$25 as a minimum and \$500 as a maximum. This change will result in the conviction of a larger percentage of those who violate the forest laws, inasmuch as it will eliminate the objection of many magistrates to the imposing of a fine greater than the value of the property destroyed. It will also place the jurisdiction of cases before the justices, while formerly the maximum fine, being over \$500, placed the jurisdiction in the superior courts and made too long, expensive trials, which were objected to by the counties, which formerly received no portion of the fines. The disposal of fines has also been changed. Formerly the State received the entire sum, but under the new law the county in which a conviction is secured divides the net fine equally with the State.

The other bill related to the administration and personnel of the State Forestry Department. This bill passed the Assembly without opposition, but was amended in the Senate in such form that it threw a greater burden on the State than on the several counties. On this account it was vetoed by the Governor. The opposition to this bill in the Senate was led by Senator Weed, a former lumberman, and at present chairman of the Board of Supervisors of Siskiyou County, who objected principally to the section giving power to the State Forester to compel lumber companies to clear up dangerous slashings, and to compel county officials to clear the brush from their rights of way. By the loss of this bill the department was forced to forego some improvements that were contemplated, but as the old law containing the provisions objected to still stands, the power to compel lumber companies to take care of their cut-over land and counties to clear their rights of way is retained.

